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Our Ref: 1018-2/MBE
Date: June 8, 2000

JC714 U.S. PTO
09/589758
06/09/00

Dear Sir:

Transmitted herewith for filing is the patent application of

Inventor(s): Richard R. Haws and Robert Nicolucci

Title: AUTOMATIC ADAPTIVE DIMENSIONING FOR CAD SOFTWARE

Enclosed are:

- (X) Disclosure
- (X) Claims
- (X) Abstract
- (X) Formal drawings (11 sheets)
- (X) Declaration/Power of Attorney
- (X) 2 Verified statement(s) establishing small entity status under 37 C.F.R. 1.9 and 37 C.F.R. 1.27.
- () Assignment(s)
- () Certified copy of the priority document(s)
- (X) Cheque in the amount of \$345.00 in payment of the required fees.

THE FILING FEE HAS BEEN CALCULATED AS SHOWN BELOW:

	No. Filed	No. Extra
Basic Fee		
Total Claims	6-20	
Indep. Claims	3- 3	
() Multiple dependent claims presented		

Small Entity	
RATE	FEE
	\$345.00
x 9=	\$
x 39=	\$
+130=	\$
TOTAL	\$345.00

Large Entity	
RATE	FEE
	\$690.00
x 18=	\$
x 78=	\$
+260=	\$
TOTAL	\$

The Commissioner is hereby authorized to charge any deficiency or credit any overpayment in the enclosed fees to our Deposit Account No. 500663. A signed copy of this letter is enclosed if required for this purpose.

Please direct all correspondence and telephone inquiries to the undersigned at the address below.

Respectfully submitted,

Mark B. Eisen
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Applicant or Patentee: Richard R. Haws and Robert Nicolucci
Serial or Patent No.: _____
Filed or Issued: _____

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY
STATUS (37 CFR 1.9(f) and 1.27(b)) - INDEPENDENT INVENTOR**

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 C.F.R. §1.9(c) for purposes of paying reduced fees under §§ 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled:

AUTOMATIC ADAPTIVE DIMENSIONING FOR CAD SOFTWARE

described in

☒ the specification filed herewith.

☐ application serial no. _____, filed _____

☐ patent no. _____, issued _____

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 C.F.R. §1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 C.F.R. §1.9(d) or a nonprofit organization under 37 C.F.R. §1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed or licensed or am under an obligation under contract or law to assign, grant, convey or license, any rights in the invention is listed below:

☐ no such person, concern or organization

☒ persons, concerns or organizations listed below:

Full name RN Design ~~Inc.~~ GROUP INC *JUNE 7/00*
Address 71 Silton Road, Unit 9, Woodbridge, Ontario, Canada L4L 7Z8
☐ INDIVIDUAL ☒ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

Full name _____
Address _____
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

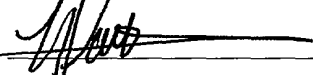
I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, any fee due after the date on which status as a small entity is no longer applicable (37 C.F.R. §1.28(b)).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such wilful false statements may jeopardize the validity of the application, any patent issuing therefrom, or any patent to which this verified statement is directed.

NAME OF INVENTOR

Richard R. Haws

SIGNATURE OF INVENTOR



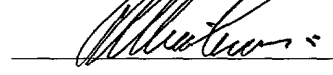
DATE

June 7, 2000

NAME OF INVENTOR

Robert Nicolucci

SIGNATURE OF INVENTOR



DATE

June 7 / 00

Applicant or Patentee: Richard R. Haws and Robert Nicolucci
Serial or Patent No.: _____
Filed or Issued: _____

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY
STATUS (37 CFR 1.9(f) and 1.27(b)) - SMALL BUSINESS CONCERN**

As an official empowered to act on behalf of the Small Business Concern identified below:

NAME OF SMALL BUSINESS CONCERN RN Design ~~Inc.~~ GROUP INC
ADDRESS OF SMALL BUSINESS CONCERN 71 Siltan Road, Unit 9, Woodbridge, Ontario, Canada L4L 7Z8

I hereby declare that the above small business concern qualifies as a Small Business Concern as defined in 37 C.F.R. §1.9(d) for purposes of paying reduced fees to the Patent and Trademark Office under §§ 41(a) and (b) of Title 35, United States Code with regard to the invention entitled:

AUTOMATIC ADAPTIVE DIMENSIONING FOR CAD SOFTWARE

described in

☒ the specification filed herewith.

☐ application serial no. _____, filed _____

☐ patent no. _____, issued _____

The above Small Business Concern has not assigned, granted, conveyed or licensed and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 C.F.R. §1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 C.F.R. §1.9(d) or a nonprofit organization under 37 C.F.R. §1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed or licensed or am under an obligation under contract or law to assign, grant, convey or license, any rights in the invention is listed below:

☒ no such person, concern or organization

☐ persons, concerns or organizations listed below:

Full name _____

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Full name _____

Address _____

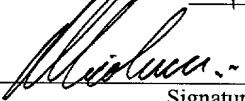
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in the above Small Business Concern's loss of entitlement to small entity status prior to paying, or at the time of paying, any fee due after the date on which status as a small entity is no longer applicable (37 C.F.R. §1.28(b)).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such wilful false statements may jeopardize the validity of the application, any patent issuing therefrom, or any patent to which this verified statement is directed.

NAME OF OFFICIAL: Robert Nicolucci

TITLE OF OFFICIAL: PRESIDENT


Signature

JUNE 7/00
Date

AUTOMATIC ADAPTIVE DIMENSIONING FOR CAD SOFTWARE

Field of the Invention

This invention relates to computer software. In particular, this invention relates to an improvement in computer aided design (CAD) software.

5 Background of the Invention

There are many types of computer aided design (CAD) software which assist in architectural design and drafting. Such software is widely used, as it considerably simplifies the task of drafting plans to scale with such annotations as are required for the needs of the user.

10 One of the advantages of CAD software is a feature whereby an object can have dimension annotations associated with the object, including dimension lines, extension lines, symbols of termination (e.g. arrowheads, architectural ticks) and dimension text, created automatically. Thus, the dimension can be automatically
15 annotation of the drawing, which had previously had been a very time consuming process.

Some CAD programs allow manual associative dimensioning, by which a dimension annotation can be manually associated with an object, and thereafter if the object is moved the dimension annotation adjusts automatically with the object. This
20 also facilitates the annotation of drawings, however it requires that the user manually attach the dimension to the object in order for changes in the object to be reflected in the associated dimension annotation. Furthermore, if the object is broken, for example if another object is interposed in or superposed onto an intermediate point of the
25 existing object, the associative dimensioning cannot accommodate the new object and new dimensions, so new dimension annotations corresponding to the new object must be manually added and new associations must be established between the existing dimension annotation and the remaining portions of the existing object. This is a time consuming process, particularly during the modification stages of CAD drafting.

For example, adding a window to an existing wall in a CAD drawing requires that the window be inserted at the intended position, that the existing dimension annotations be deleted and that new extension lines, dimension lines, termination symbols and dimension text be created to reflect the new segmentation of the object and/or the addition of any new object (or the removal of an existing object).

It would accordingly be advantageous if dimension annotations were created automatically as objects are created, and automatically associated with the objects as they are created. It would further be advantageous if dimension annotations would change automatically to accommodate any change to the existing objects, such as a new object inserted into a selected position relative to the existing objects or the deletion of an object from a group of objects.

Summary of the Invention

The present invention overcomes these disadvantages by providing automatic adaptive dimensioning in a CAD software program. According to the invention, dimension annotations are created by the CAD program automatically as an object is drawn and automatically associated with the target object. Thereafter, changing the length of the target object automatically changes the associated dimension annotation, or alternatively, changing the associated dimension annotation automatically changes the length of the target object. Further, changing the dimension annotation associated with an adjacent object automatically changes the position of the target object.

Moreover, when another object is inserted into an intermediate position of an existing object, the automatic adaptive dimensioning feature of the invention automatically creates dimension annotations corresponding to the position of the new object relative to the existing object; likewise, the new object can be automatically positioned in relation to the existing object by specifying interposition dimensions or segment lengths in the existing dimension annotations. Thereafter, any changes to the lengths or relative positions of the objects will automatically change the associated dimension annotations, and any changes made to the associated dimension annotations will automatically change the lengths and/or relative positions of the objects.

Incorporating the automatic adaptive dimensioning feature of the invention into a CAD program accordingly substantially decreases the production time of architectural drawings. The commensurate savings in labour, particularly in the input, documentation and modification stages of drawing preparation, provides a
5 considerable advantage over conventional CAD drawing programs.

These and other features of the invention will be apparent from the detailed description which follows.

The present invention thus provides a method of annotating a computer aided design drawing, comprising the steps of a. setting parameters of dimension
10 annotations comprising one or more of dimension text, dimension lines, extension lines and termination symbols, b. creating a target object by selecting a length of the target object; and c. automatically generating dimension annotations corresponding to the target object, whereby the dimension annotations are associated with the target
15 target object, the dimension annotations associated with the target object or the dimension annotation associated with at least one adjacent object, or both, are automatically adjusted to correspond to the modification of the length or relative position of the target object.

The present invention further provides a computer program product for use
20 with a computer, the computer program product comprising a computer usable medium having computer readable program code means embodied in said medium for annotating a computer aided design drawing, said computer program product having computer readable program code means for setting parameters of dimension
25 annotations comprising one or more of dimension text, dimension lines, extension lines and termination symbols, computer readable program code means for creating a target object by selecting a length of the target object; and computer readable program
code means for automatically generating dimension annotations corresponding to the target object, whereby the dimension annotations are associated with the target object
such that in response to a modification of a length or relative position of the target
30 object, the dimension annotations associated with the target object or the dimension

annotation associated with at least one adjacent object, or both, are automatically adjusted to correspond to the modification of the length or relative position of the target object.

5 The present invention further provides a program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps for annotating a computer aided design drawing, said method steps comprising: a. setting parameters of dimension annotations comprising one or more of dimension text, dimension lines, extension lines and termination symbols, b. creating a target object by selecting a length of the target
10 object; and c. automatically generating dimension annotations corresponding to the target object, whereby the dimension annotations are associated with the target object such that in response to a modification of a length or relative position of the target object, the dimension annotations associated with the target object or the dimension annotation associated with at least one adjacent object, or both, are automatically
15 adjusted to correspond to the modification of the length or relative position of the target object.

A further aspect of the invention includes the step of, in response to a modification of the dimension annotation associated with the target object or the dimension annotation associated with at least one adjacent object or both,
20 automatically modifying a length or relative position of the target object to correspond to the modification of the dimension annotation.

Brief Description of the Drawings

In drawings which illustrate by way of example only a preferred embodiment of the invention,

25 Figure 1 is a diagrammatic illustration of objects and associated dimension annotations in a conventional CAD drawing,

Figure 2 is a diagrammatic illustration of an object and associated dimension annotations in a CAD drawing using the method of the invention,

Figure 3 is a diagrammatic illustration of the drawing of Figure 2 after inserting a new object,

Figure 4 is a diagrammatic illustration of the drawing of Figure 3 after inserting a new object,

5 Figure 5 is a diagrammatic illustration of the drawing of Figure 4 after inserting a new object,

Figure 6 is a diagrammatic illustration of the drawing of Figure 5 after inserting a new object,

10 Figure 7 is a diagrammatic illustration of the drawing of Figure 6 after inserting a new object,

Figure 8 is a diagrammatic illustration of the drawing of Figure 7 after inserting a new object,

Figure 9 is a diagrammatic illustration of the drawing of Figure 8 after inserting a new object,

15 Figure 10 is a diagrammatic illustration of the drawing of Figure 9 after moving an existing object, and

Figure 11 is a diagrammatic illustration of the drawing of Figure 10 after deleting an object.

Detailed Description of the Invention

20 Figure 1 illustrates an architectural drawing by way of example. In a conventional CAD drawing program, line objects representing walls 10 and a windows 12 which are drawn or inserted in the CAD environment. Dimension text 20 specifying the lengths and relative positions of the objects 10, 12 are entered by the user, and in some CAD programs may be thereafter manually associated with each
25 respective object 10, 12, so that a change in the length of the object is automatically reflected in the associated dimension text 20. Extension lines 22 are positioned or picked (selected) by the user for the desired dimension text, and dimension lines 24

and termination symbols 26 such as architectural ticks are either manually created by the user, or generated based on user-defined settings, based on the selected positions of the extension lines 22.

According to the invention, the dimension annotations are automatically
5 created and associated with the respective objects to which they relate, and thereafter these dimension annotations are adaptive. Thus, the interposition or superposition of a new object in or onto an existing object automatically results in new extension lines 22 at the extremities of the new object, parsing of the existing dimension line 24 into segments with selected termination symbols 26, and the repositioning and
10 recalculation of dimension text to accommodate the new object.

In use, to create a horizontal or vertical dimension associated with an object 10, 12, the object dimension text 20 can be selected by clicking, picking or otherwise specifying first and second points representing the ends of the object 10 or 12. In the case of multiple dimension strings, the locations of the dimension lines 24
15 (for example baseline strings or aligned strings) are also specified by the initial user settings, as are extension lines 22 and dimension text 20, with the selected termination symbols 26, which are thereafter generated automatically by the adaptive dimensioning feature of the invention based on the coordinate positions selected for the object. This feature of the invention also automatically trims or extends the
20 dimensions annotations in response to a change in the size or position of the associated target object.

Thereafter, modifications to the existing objects 10, 12, may be made in two ways:

1. By modifying the length of the target object 8 itself and/or moving the
25 target object to a new position relative to other objects. In this situation the associated dimension annotations automatically change to adapt to the modification of the associated object's dimension and/or position, moving extension lines, arrowheads or other termination symbols, and dimension text as necessary to accommodate the modification.

2. By changing dimension text to specify a new length for the target object 8, and/or changing the dimension text of an adjacent object to reposition the target object. In this case, the length of the object whose associated dimension text has been modified changes to correspond to the modified dimension. If the length of an adjacent object is changed, the target object is repositioned to remain adjacent to the adjacent object.

Specifics of the extension lines 22, alignment of dimension lines 24 (e.g. as aligned or baseline), type of termination symbols (e.g. architectural ticks), size and placement of dimension text 20, and any other desired parameters, are selected as setup parameters by the user before commencing drawing. The CAD drawing will automatically adaptively associate dimension annotations having the predefined parameters with the respective objects as they are inserted, deleted or modified.

Thus, in the example shown as a series of drawing steps in Figures 2 to 11, a target object 8, in Figure 2 being a wall 10a, is inserted into a new CAD drawing by selecting points 11a and 11b. Dimension annotations are automatically created by the method and computer program of the invention, by creating extension lines 22a aligned with the extremities of the target object 10a, creating a dimension line 24a with termination symbols 26a at its ends and creating dimension text 20a adjacent to the dimension line 24a (or as otherwise specified by the user in the setup parameters).

In Figure 3 the target object 8 is a new exterior wall 10b, added to the drawing of Figure 2 by selecting point 11c. Again dimension annotations are automatically created for the target object by aligning extension lines 22b with the extremities of the target object 8, creating a dimension line 24b with termination symbols 26b at its ends and creating dimension text 20b adjacent to the dimension line 24b. When a new target object 8 is created, for example another exterior wall 10c, by selecting point 11d, as shown in Figure 4, in addition to automatically creating dimension annotations for the new exterior wall 10c, the position of the dimension annotations for the previous object are automatically shifted to accommodate the new target object 8.

Figures 5, 6 and 7 each add a further target object 8, in each case an exterior wall 10d, 10e and 10f, by the selection of points 11e, 11f and 11a, respectively, to delimit the exterior of the structure, and in each case dimension annotations are automatically created for each target object 8 as the target object 8 is inserted, by creating extension lines 22d, 22e, 22f aligned with the extremities of the walls 10d, 10e and 10f, creating dimension lines 24d, 24e, 24f with termination symbols 26d, 26e, 26f at their respective ends and creating dimension text 20d, 20e, 20f adjacent to the respective dimension lines 24d, 24e, 24f.

In Figure 8 a target object 8 comprising a partition wall 10g is added to the drawing of Figure 7 by selecting points 11h and 11j. In this case the adaptive feature of the invention automatically creates extension lines 22g at the appropriate points on the existing dimension lines 24a, 24f, parses the existing dimension lines 24a, 24f into segments 24g, and deletes the existing dimension text 20a, 20f and replaces it with new dimension text 20g relating to the newly created dimension line segments 24g. Similarly, when a target object 8 comprising a window 12 is added in Figure 9, the adaptive dimensioning feature of the invention automatically creates a new dimension line 24h (as specified by the user in the setup parameters) at the window 12 having an on-center extension line 22h with associated dimension text 20h and termination symbols 26h.

In Figure 10, the target object 8 is wall 10c adjacent to the wall 10d with the window 12. Wall 10c is repositioned by dragging the wall 10c to a new position from the previous position (shown in phantom lines). The automatic adaptive dimensioning feature of the invention automatically moves all associated extension lines 22b, 22d to align with the repositioned wall 10c, and replaces the existing dimension text 20b, 22d of the resized walls 10b, 10d with new dimension text 20b, 20d reflecting the new position of the wall 10c relative to adjacent objects. The lengths of walls 10b, 10d adjacent to the target object 8 (wall 10c) automatically adjust to the new position of wall 10c.

To complete the drawing, in Figure 11 the partition wall 10g (shown in phantom lines) has been deleted. The automatic adaptive dimensioning feature of the

invention deletes the extension lines 22 previously associated with the partition 10g to reconstitute the original dimension lines 24f, deletes the dimension text 20g of the parsed dimension line segments 24g, and restores the original dimension text 24f (from Figure 7).

5 Thus, the invention provides an automatic adaptive dimensioning feature in a CAD program which automatically creates and associates dimension annotations as an object is inserted into a drawing, and modifies the dimension annotations as an object is added, deleted or modified in the drawing. The invention thus provides a method of creating and modifying a CAD drawing which considerably simplifies the
10 CAD documentation process.

 The automatic adaptive dimensioning feature of the invention can be programmed into CAD software, or can be created as an independent program loaded as a “plug-in” for existing CAD software.

 A preferred embodiment of the present invention having been thus
15 described by way of example, variations and modifications will be apparent to those skilled in the art. The invention includes all such variations and modifications as fall within the scope of the appended claims.

I CLAIM:

1. A method of annotating a computer aided design drawing, comprising the steps of

- a. setting parameters of dimension annotations comprising one or more of dimension text, dimension lines, extension lines and termination symbols,
- b. creating a target object by selecting a length of the target object; and
- c. automatically generating dimension annotations corresponding to the target object,

whereby the dimension annotations are associated with the target object such that in response to a modification of a length or relative position of the target object, the dimension annotations associated with the target object or the dimension annotation associated with at least one adjacent object, or both, are automatically adjusted to correspond to the modification of the length or relative position of the target object.

2. The method of claim 1 further including the step:

- d. in response to a modification of the dimension annotation associated with the target object or the dimension annotation associated with at least one adjacent object or both, automatically modifying a length or relative position of the target object to correspond to the modification of the dimension annotation.

3. A computer program product for use with a computer, the computer program product comprising a computer usable medium having computer readable program code means embodied in said medium for annotating a computer aided design drawing, said computer program product having

computer readable program code means for setting parameters of dimension annotations comprising one or more of dimension text, dimension lines, extension lines and termination symbols,

computer readable program code means for creating a target object by selecting a length of the target object; and

computer readable program code means for automatically generating dimension annotations corresponding to the target object,

whereby the dimension annotations are associated with the target object such that in response to a modification of a length or relative position of the target object, the dimension annotations associated with the target object or the dimension annotation associated with at least one adjacent object, or both, are automatically adjusted to correspond to the modification of the length or relative position of the target object.

4. The computer program product of claim 3, further comprising computer readable program code means for in response to a modification of the dimension annotation associated with the target object or the dimension annotation associated with at least one adjacent object or both, automatically modifying a length or relative position of the target object to correspond to the modification of the dimension annotation.

5. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps for annotating a computer aided design drawing, said method steps comprising:

- a. setting parameters of dimension annotations comprising one or more of dimension text, dimension lines, extension lines and termination symbols,
- b. creating a target object by a length of the target object; and
- c. automatically generating dimension annotations corresponding to the target object,

whereby the dimension annotations are associated with the target object such that in response to a modification of a length or relative position of the target object, the dimension annotations associated with the target object or the dimension

annotation associated with at least one adjacent object, or both, are automatically adjusted to correspond to the modification of the length or relative position of the target object.

6. The program storage device of claim 5, further including a method step comprising:

d. in response to a modification of the dimension annotation associated with the target object or the dimension annotation associated with at least one adjacent object or both, automatically modifying a length or relative position of the target object to correspond to the modification of the dimension annotation.

Abstract

An automatic adaptive dimensioning program for CAD software in which dimension annotations are created by the CAD program automatically as an object is drawn and automatically associated with the object. Thereafter, changing the length of the object automatically changes the associated dimension annotation, or alternatively, changing the associated dimension annotation automatically changes the length of the object. When another object is interposed into or superposed onto an intermediate position of the existing object, the automatic adaptive dimensioning annotation feature of the invention automatically creates dimension annotations corresponding to the position of the new object relative to the existing object. The new object can be automatically positioned in relation to the existing object by specifying interposition dimensions or segment lengths in the dimension annotations.

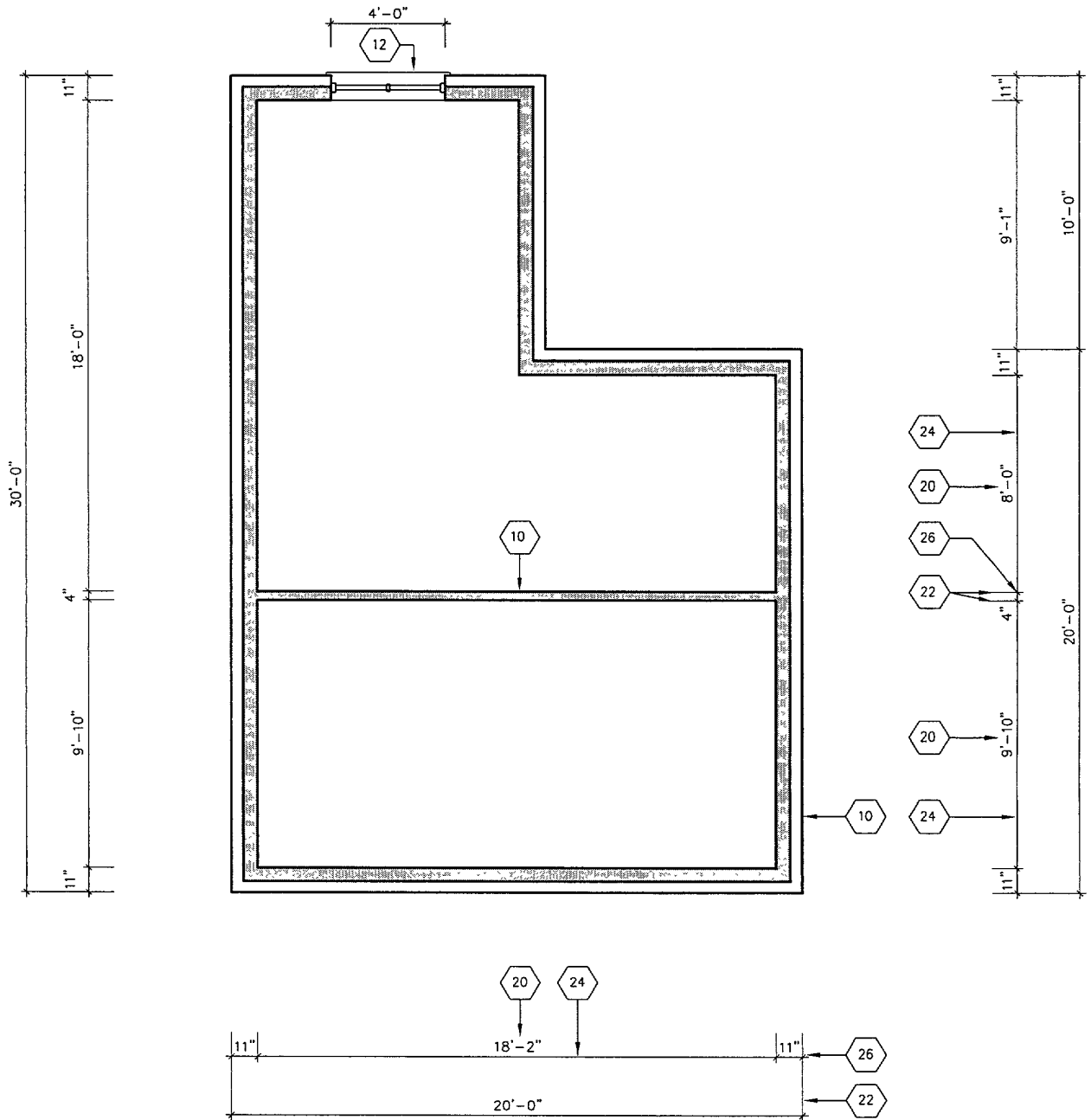


figure 1

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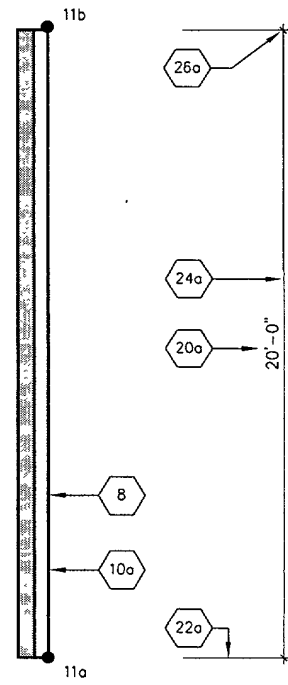


figure 2

006090" 854268560

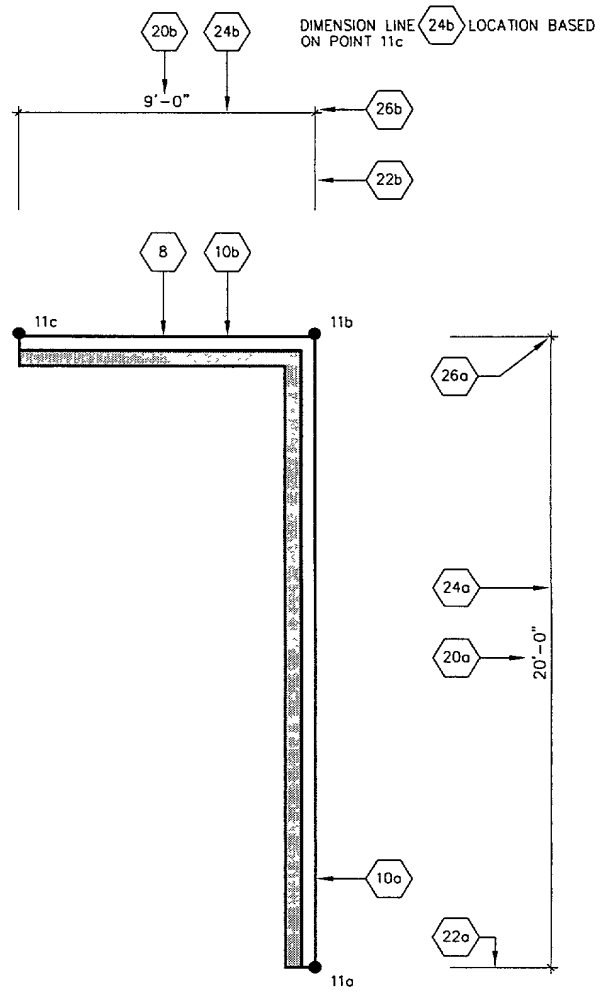


figure 3

DIMENSION LINE ON POINT 11d AUTOMATICALLY ADJUSTED TO MAINTAIN OFFSET DISTANCE

20b 24b 26b 22b 20c 24c 22c 26c 20a 24a 22a 26a 20c 24c 22c 26c

9'-0" 8'-1" 11" 10'-0" 20'-0"

11d 11c 11b 11a

8 10c 10b 8 10a 22a

figure 4

000000" 09268960

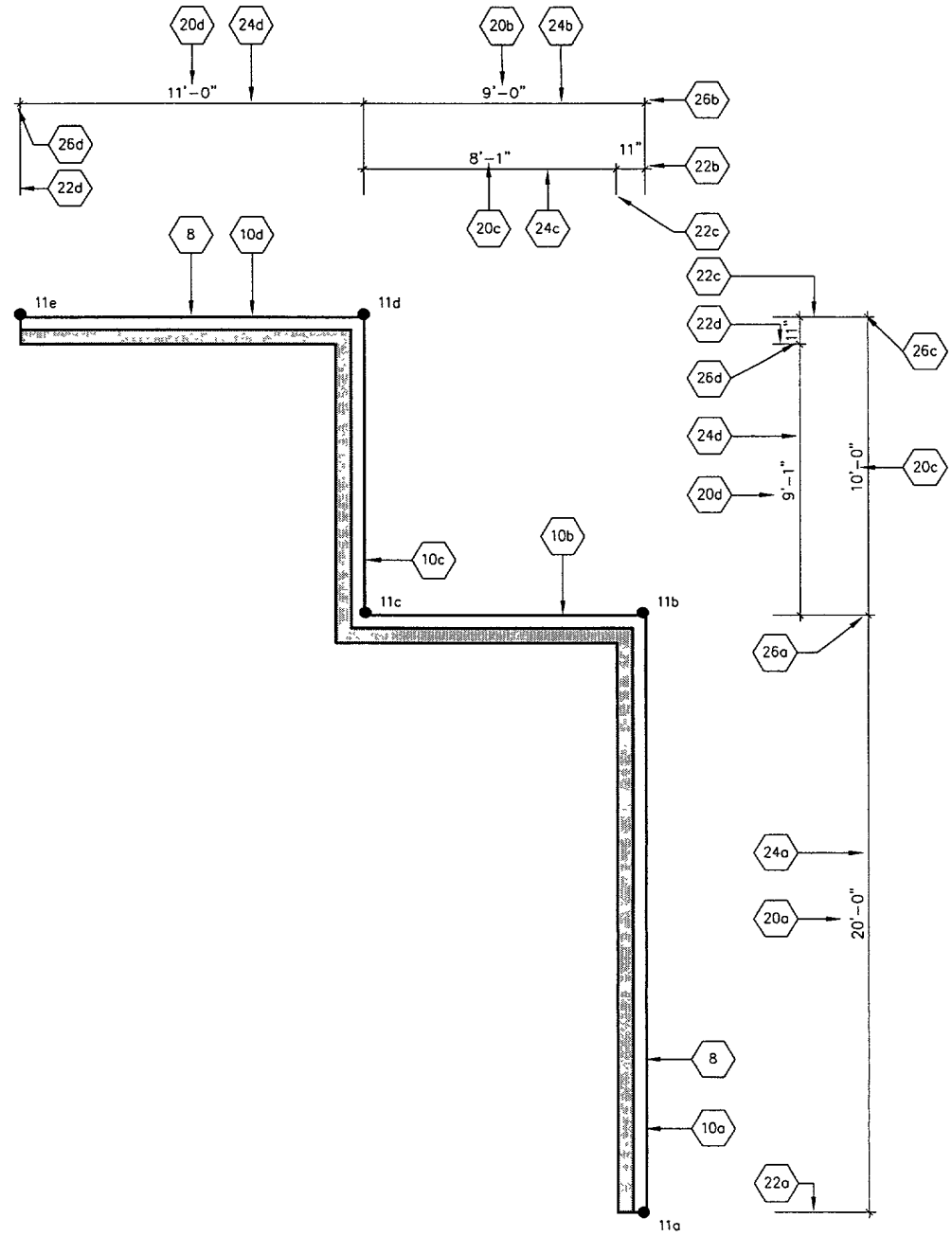


figure 5

000000 000000 000000

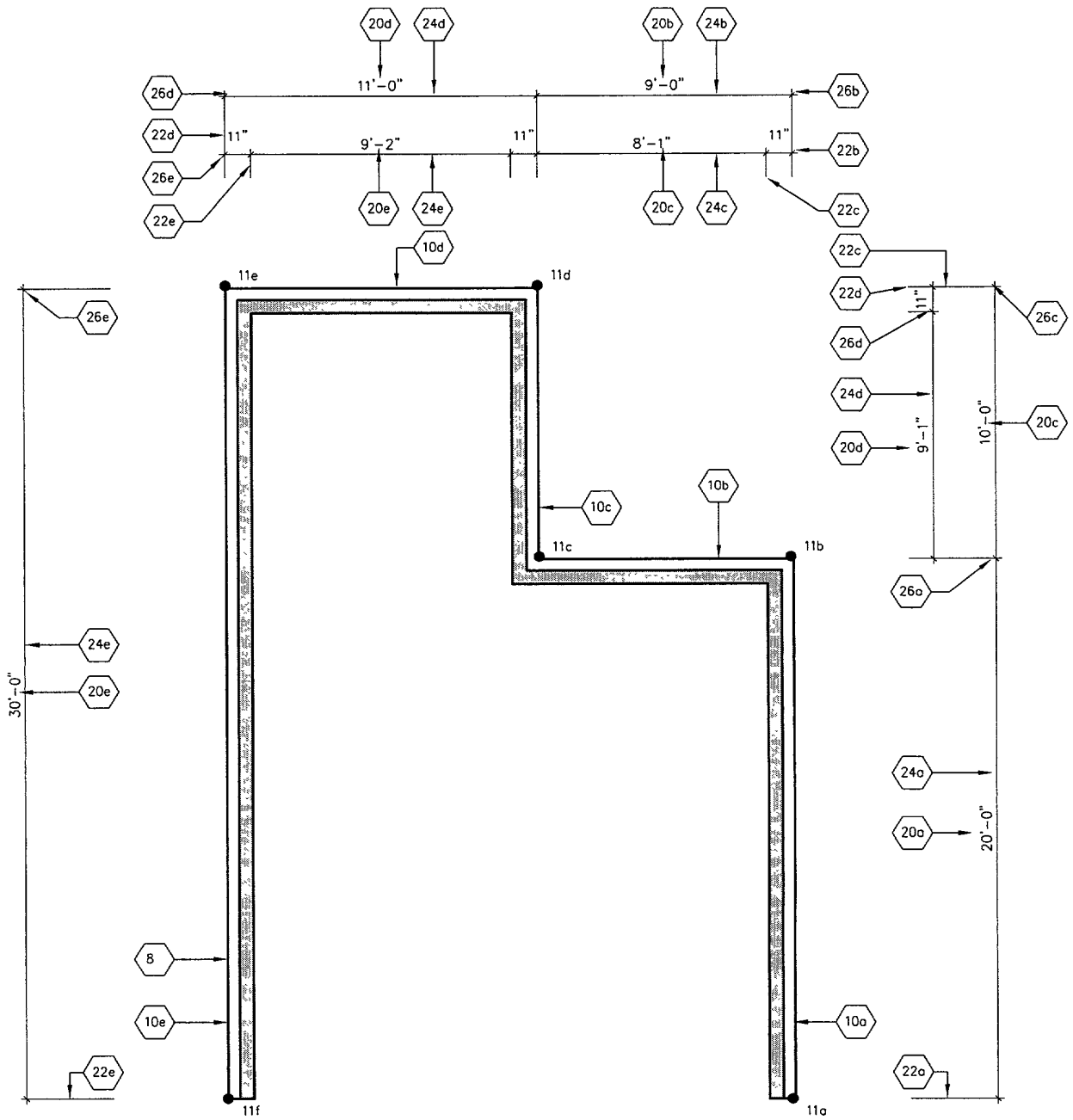


figure 6

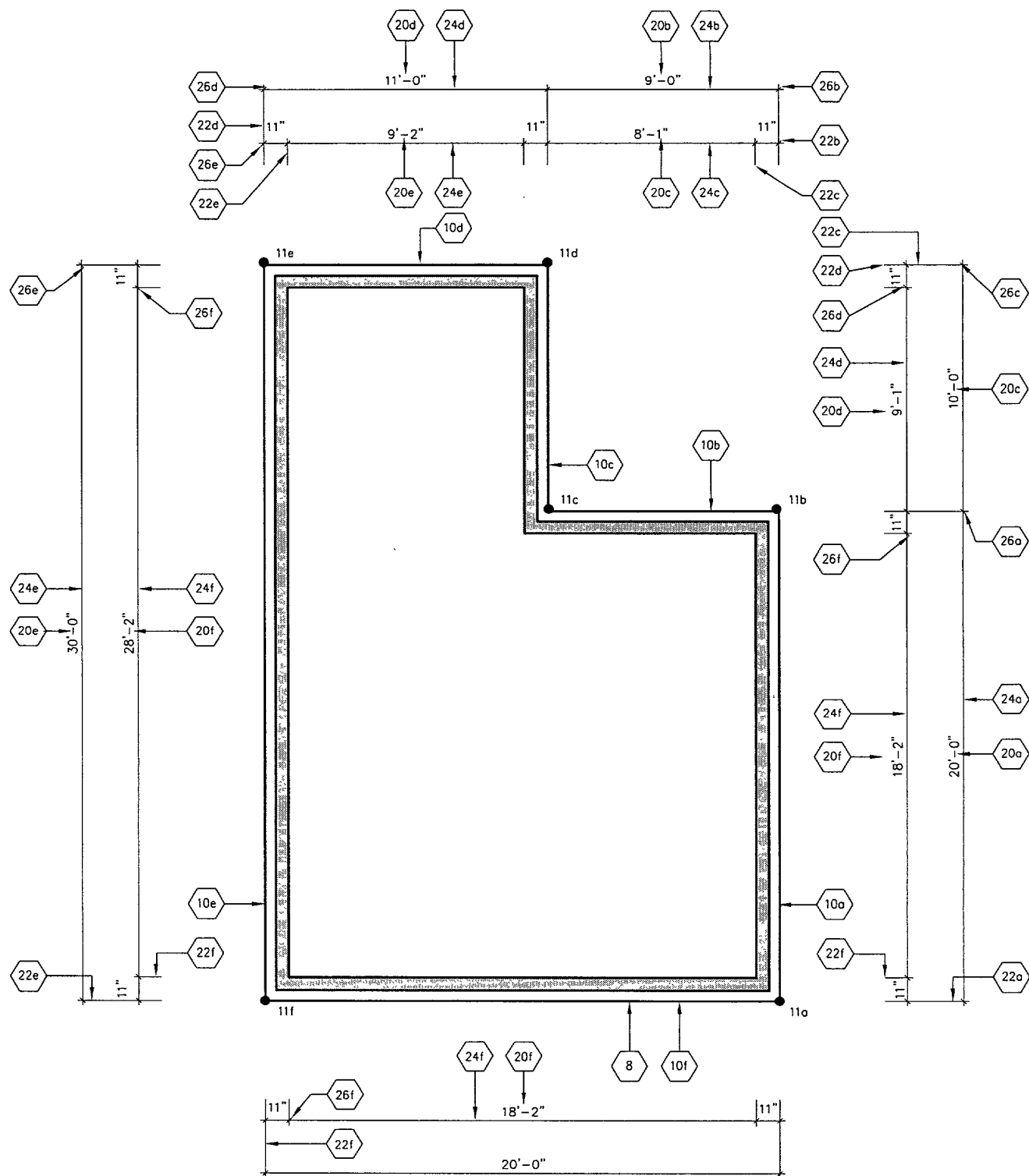


figure 7

Architectural floor plan of a building with various rooms and corridors. The plan includes dimensions for rooms and corridors, and labels for rooms and corridors. The building has a main entrance on the left side, a large central hall, and several smaller rooms and corridors. The plan is oriented with the entrance on the left and the main hall in the center. The dimensions are given in feet and inches, and the labels are in a standard font.

figure 8

[illegible]

figure 9

000000" 0320900

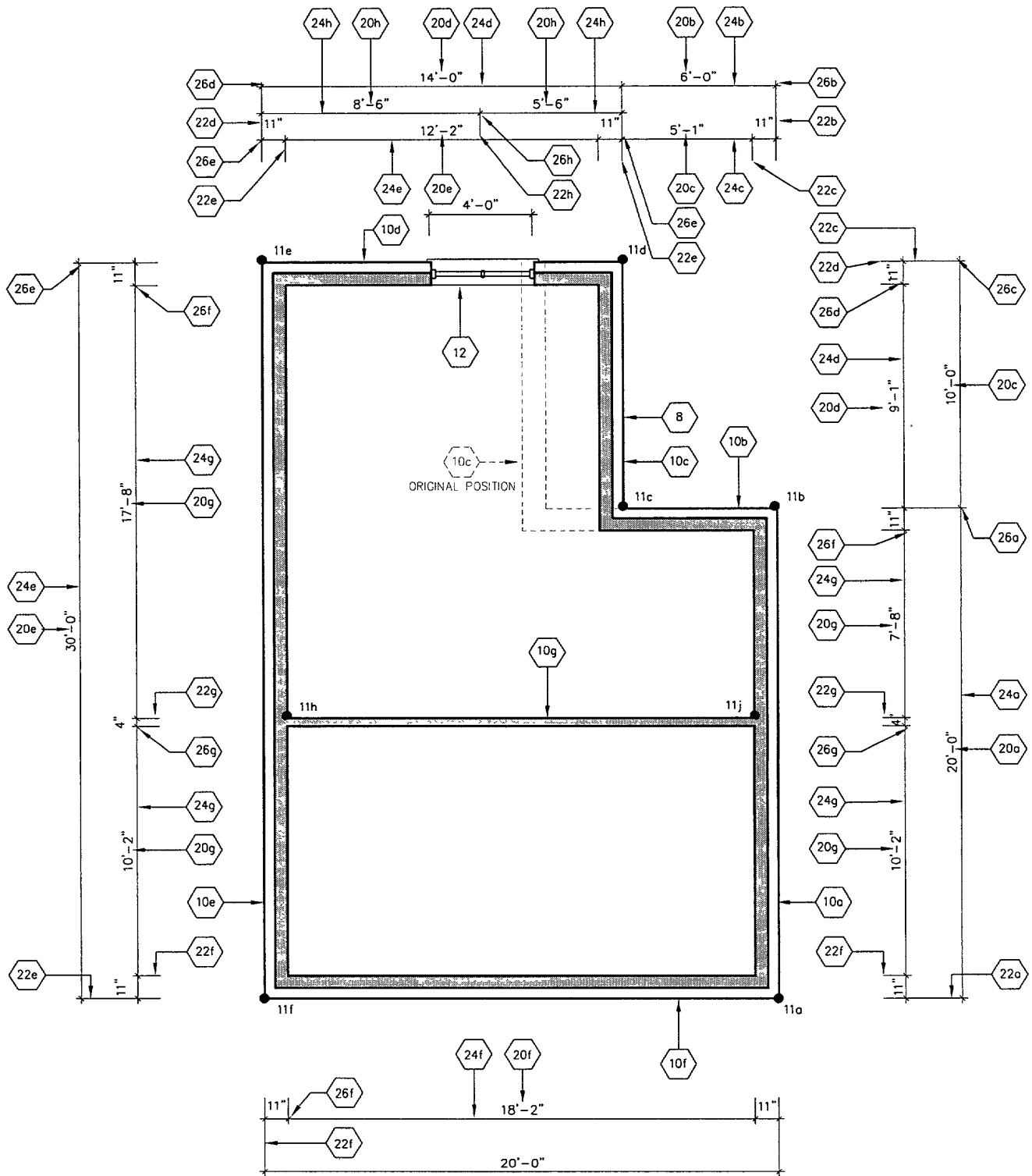


figure 10

000050" 03200500

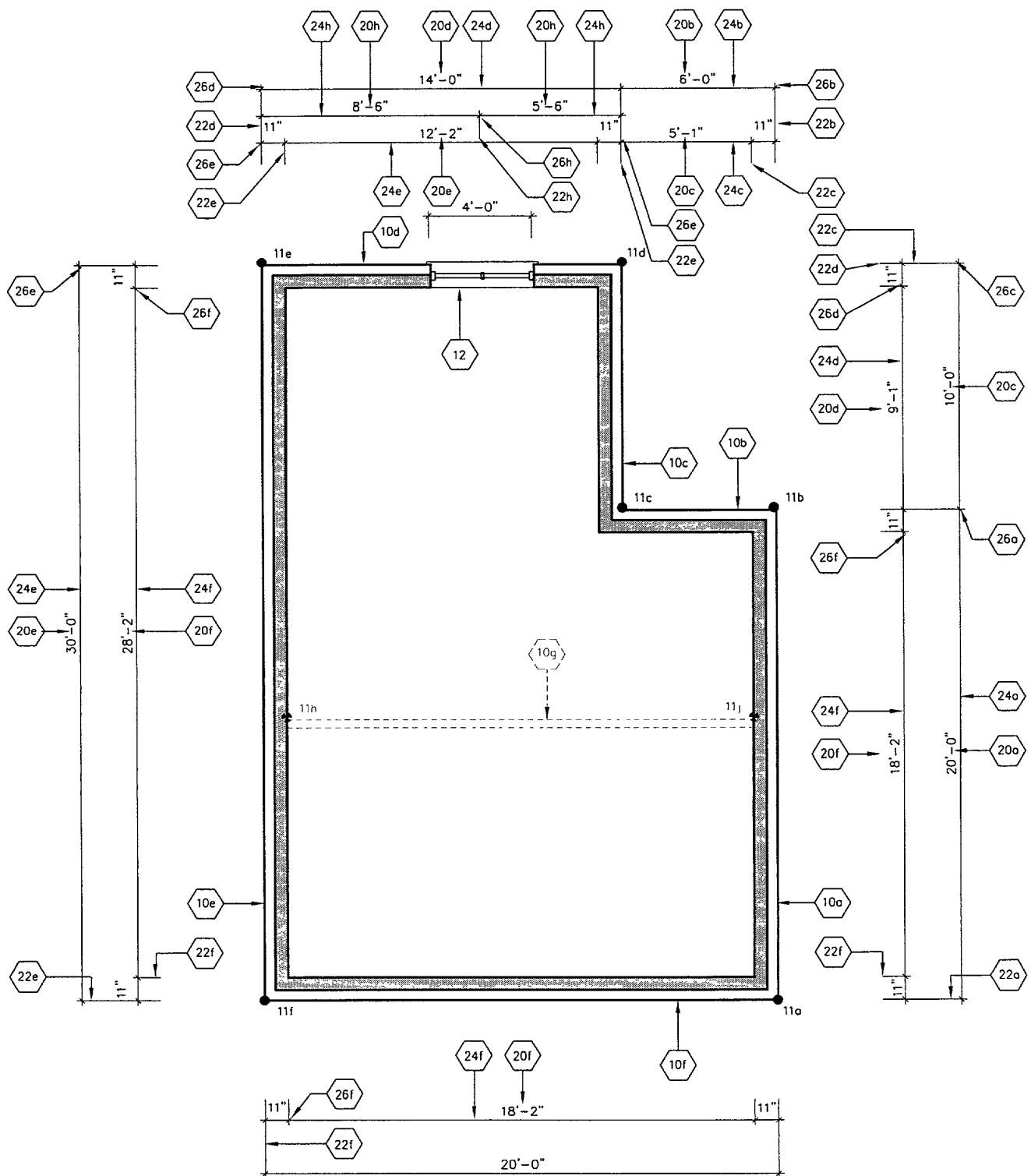


figure 11

UNITED STATES

Utility Patent Application: Declaration, Power Of Attorney

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I verily believe I am the original, first and joint inventor of the subject matter which is claimed and for which a patent is sought on the design entitled
AUTOMATIC ADAPTIVE DIMENSIONING FOR CAD SOFTWARE

the specification of which

☒ is attached hereto.
☐ was filed on _____ as
Application Serial No. _____
and was amended on _____
(if applicable)
☐ was described and claimed in PCT Application No. _____
filed on _____
and was amended under PCT article 19 on _____
(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment specifically referred to in this Declaration. I acknowledge the duty to disclose all information which is known to me to be material to the patentability of this application in accordance with Title 37, C.F.R. §1.56.

PRIORITY CLAIM (35 USC § 119)

I hereby claim foreign priority benefits under Title 35, United States Code §119 and §172 of any foreign application(s) for patent or inventor's certificate(s) listed below and I have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application from which priority is claimed:

Prior Foreign Application(s):			Priority Claimed	
			Yes	No
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
(number)	(country)	(date filed)		
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
(number)	(country)	(date filed)		
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
(number)	(country)	(date filed)		

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined by Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Type of Application	Appln. Serial No.	Filing Date	Status (issued, pending, abandoned)
<input type="checkbox"/> U.S. <input type="checkbox"/> PCT	_____	_____	_____
<input type="checkbox"/> U.S. <input type="checkbox"/> PCT	_____	_____	_____

DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such wilful false statements may jeopardize the validity of the application or any patent issuing therefrom.

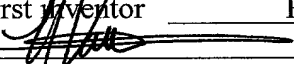
APPOINTMENT OF ATTORNEY

I hereby appoint Mark B. Eisen (Registration No. 33088), Dino P. Clarizio (Registration No. 37572), Michelle L. Wassenaar (Registration No. 40387), Cynthia J. Ledgley (Registration No. 34533) and David M. Reive (Registration No. 38792) as my attorneys and agents to prosecute this application, to make alterations and amendments thereto, to receive the patent and all correspondence relating to this application, and to transact all business in the U.S. Patent and Trademark Office connected therewith, and my attorneys are hereby given full power of substitution and revocation.

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